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EXAMINER

CHEN, WENPENG

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/996,320	Applicant(s) SIROHEY ET AL.	
	Examiner Wenpeng Chen	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19,21-24 and 26-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19,21-24 and 26-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Examiner's responses to Applicant's remark

1. Applicants' amendments filed on 6/20/2005 overcome the followings set forth in paper #20050127 mailed on 3/14/2005:

- objection to drawings (paragraph 3);
- objection to specification (paragraphs 4-5).

2. Applicants' arguments about priority filed on 6/20/2005 are acknowledged. However, the Examiner maintains his decision with regard to priorities for various parts of the specification for determining prior arts.

3. Applicants' arguments with regard to Claim 1 filed on 6/20/2005 have been fully considered but are moot in view of the new ground(s) of rejection due to Applicants' amendment to Claim 1.

Actually the amended Claim 1 adds the limitations recited in the original Claims 20 and 25 to the original Claims 1. The Applicants just stated that Dekel does not teach the two newly added limitations of Claim 1 without addressing the Examiner's cited portions of teaching the features recited in the original Claims 20 and 25. For example, Dekel's teaching of the feature related to "breaking transmission" was cited in the previous office action in lines 13-14, page 8. Without any rebuttal, the Examiner considers that the Applicants accepted the Examiner's position with regard to the original Claims 1, 20, and 25. Therefore, the amended Claim 1 is rejected with the reasons presented previously.

4. Applicants' arguments with regard to Claims 29, 50, and 73 filed on 6/20/2005 have been fully considered but are not persuasive. The Examiner has thoroughly reviewed Applicants' arguments but firmly believes that the cited reference to reasonably and properly meet the claimed limitation.

Applicants' argument -- Dekel fails to teach "determining a viewport resolution of a client viewport" even in the Examiner's cited passages.

Examiner's response -- The Examiner disagrees. Column 15, lines 60-67 of Dekel recites at least "a viewing device with limited resolution." How can one decide a viewing device having limited resolution without determining its resolution? This passage and that at column 23, lines 11-28 clearly teach the resolution of a viewing device has to be determined.

5. Applicants' request provision of a non-final office action to include an opinion on Claim 86 is granted. The previous Office Action actually implicitly provides the Examiner's opinion on Claim 86, because (1) Claim 86 is a medium claim having the same feature as that of Claim 52 and (2) Claim 52 has been addressed. Nevertheless, to be fair to the Applicants, the Examiner provides a non-final office action below.

Claim Objections

6. Claim 73 is objected to because of the following informalities: How can a computer program, which is an abstract stuff, comprise a machine readable medium? The

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Examiner recommends changing "computer program" to "computer program product."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 74-86 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the following reasons.

-- Claims 74-86 are system claims, while their parental Claim 73 is a computer-program claim. Do Claims 74-86 claim computer program or system?

Claim Interpretations

9. For further examination, the Examiner made the following interpretations:

-- Change "computer program" to "computer program product" in line 1, Claim 73.

-- Change "system" to "computer program product" in line 1, for each of Claims 74-86.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-5, 7-19, 21-24, 26-63, and 73-86 are rejected under 35 U.S.C. 102(e) as being anticipated by Dekel et al. (US patent 6,314,452.)

a. For Claims 1-5 and 7-19, 21-24, 26-28, Dekel teaches a method for selectively transferring image data, the method comprising:

-- selecting an image resolution suitable for display in a desired viewport, wherein the image resolution corresponds to one set of a plurality of data sets decomposed from an image by lossless wavelet decomposition; (column 5, line 60 to column 6, line 61; column 15, line 39 to column 16, line 9; column 16, lines 37-57; column 22, lines 38-48; column 24, lines 17-21 and 58-65; Scale which is associated with view resolution for display is selected by the client. Reversible wavelet transforms produce lossless wavelet decomposition.)

-- selectively retrieving a portion of the plurality of data sets for recomposition of the image at the image resolution, the portion of the plurality of data sets being smaller than the plurality of data sets wherein selectively retrieving the portion comprises requesting a data stream comprising the portion of the plurality of data sets arranged sequentially in a desired order based on the lossless wavelet decomposition and breaking transmission of the data stream upon complete retrieval of the portion and prior to transmission of the entire data stream; (column 5, lines 24-47; column 16, lines 38-57; column 19, line 18 to column 22, line 38; column 22, line 38 to column 23, line 6; column 5, lines 24-33; column 15, lines 39-60; column 16, lines 16-29; Progress By Resolution mode; column 20, lines 28-46; Data based on the client's request list are retrieved from the server to client for rendering to the specified resolution. Only

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part of the total data set is retrieved. When transmission is broken, less than the entire data are transmitted.)

-- wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition; (column 24, lines 59-64; column 28, lines 10-60)

-- wherein each of the plurality of data sets is compressed by lossless compression; (column 24, lines 17-21; column 28, line 62 to column 29, line 53; Lossless transmission requires every step to lossless, including all compression.)

-- wherein the acts of selecting the image resolution and selectively retrieving the portion are executed automatically; (column 15, lines 17-37; The client's action of zoom-in on a GUI makes the client's imaging module to generate automatically the selection of resolution and the retrieval of the selected portions of data.)

-- wherein each of the data sets comprises a hierarchical set of sub-bands, one set comprising a low frequency component at a lowest resolution level and each remaining set comprising high frequency components at successively higher resolution levels; (column 5, line 48 to column 6, line 19; column 8, line 57 to column 9, line 33; Data of a coding block is a data set that comprises a hierarchical set of sub-bands.)

-- wherein selecting the image resolution comprises selecting the image resolution from a plurality of progressively higher resolution levels, each corresponding to one of the plurality of data sets; (column 6, lines 7-19; column 15, lines 45-60; column 19, lines 18-52; Data of selected $t_{\text{resolution}}$ are selected and retrieved. The data with $t_{\text{resolution}}$ larger than 1 are data of a plurality of progressively higher resolution levels.)

-- wherein selecting the image resolution comprises identifying a lowest suitable one of the plurality of progressively higher resolution levels that does not require upward scaling beyond a desired scaling threshold for display in the desired viewport; (column 20, lines 6-17; The required resolution is just above the resolution of ROI. There is no need of upward scaling.)

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-- wherein identifying the lowest suitable one comprises evaluating a highest local resolution level of the plurality of progressively higher resolution levels; (column 5, lines 24-47; column 15, lines 17-37; section 5.1; column 19, lines 64-66; Data blocks stored in the client cache are evaluated and a highest local resolution level stored at the client is determined for deciding the request list.)

-- wherein selectively retrieving the portion comprises recalling the highest local resolution level, which is the lowest suitable one; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client views a low resolution ROI first, the client selects and stores data blocks up to the highest local resolution level for the low resolution, which is the lowest suitable one for rendering the low resolution ROI. When the client decides to zoom into a high resolution, the data blocks up to the highest local resolution level already stored in the client cache are recalled.)

-- wherein selectively retrieving the portion comprises remotely retrieving the lowest suitable one, and any resolution levels between the highest local resolution level and the lowest suitable one, from remote storage; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client zooms to view a high resolution ROI, the lowest suitable one is associated with rendering the high resolution ROI in this case. Because data blocks are stored and available at the client up to the highest local resolution level for rendering the corresponding low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the lowest suitable one for rendering the high resolution version are retrieved from remote storage in the server.)

-- wherein selecting the image resolution comprises zooming the desired viewport toward a desired viewport resolution, wherein zooming the desired viewport comprises zooming the desired viewport inwardly toward a spatial region of interest; (column 15, lines 17-28; column

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15, line 60 to column 16, line 9; column 27, lines 37-43; New ROI view parameters are called during a zoom-in process for a desired viewport resolution.)

-- wherein selectively retrieving the portion comprises: identifying a highest local resolution level corresponding to a highest locally stored set of the plurality of data sets; and locating the image resolution selected; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client views a low resolution ROI first, the client selects and stores data blocks up to the highest local resolution level, which is the for rendering the low resolution ROI. When the client decides to zoom into a high resolution, the image resolution is selected and located from a server.)

-- wherein locating comprises: identifying a remote storage location if the image resolution exceeds the highest local resolution level; and retrieving from the remote storage location a group of the plurality of data sets comprising the one set and any sets of the plurality of data sets corresponding to resolution levels between the highest local resolution level and the image resolution selected; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; Because data blocks are stored and available at the client up to the highest local resolution level for rendering the low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the image resolution selected are retrieved from remote storage in the server.)

-- identifying a local storage location if the highest local resolution level exceeds the image resolution selected; and recalling the portion from the local storage location; (column 15, lines 17-28; When data blocks of the highest local resolution level stored in the client cache have resolution exceeding the image resolution selected, data are recalled from the client cache. No request of data from the server is needed.)

-- wherein zooming the desired viewport comprises zooming the desired viewport outwardly for viewing a relatively broader region of interest; (column 15, lines 15-67; The client

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can select any ROI. When parameter wordPolygon is changed from a small area to an expanded area, it is an outward zooming.)

-- wherein selectively retrieving the portion comprises using a highest local resolution level corresponding to a locally stored group of the plurality of data sets for zooming the desired viewport outwardly; (column 15, lines 17-28; For an outward zooming, the viewport resolution is reduced. In this case, data blocks of the highest local resolution level stored in the client cache have resolution exceeding the new resolution, data associated with the old viewing condition are recalled from the client cache. No request from the server is needed for that portion of data.)

-- scaling the image resolution to fit the desired viewport; (column 15, lines 60-67; column 20, lines 13-26; column 22, lines 23-35; column 23, lines 12-28)

-- wherein selectively retrieving the portion comprises requesting a data stream comprising the portion of the plurality of data sets arranged sequentially in a desired order based on the lossless wavelet decomposition and wherein the desired order comprises an order of increasing resolution; (column 5, lines 24-33; column 15, lines 39-60; column 16, lines 16-29; Progress By Resolution mode)

-- wherein requesting the data stream comprises obtaining image characteristics disposed in a header of the data stream; (column 24, lines 11-16; column 10, lines 17-22)

-- wherein the image characteristics comprise a quantity of the plurality of data sets, a resolution of each data set, and a compressed size of each data set; (column 23, line 43 to column 25, line 62; column 10, lines 17-22; Parameter losslessMode indicates a quantity. Parameter numberOfResolution is related to a resolution. A compressed size of each data set is shown in column 31, lines 7-13.)

-- reading the image characteristics disposed in the header during retrieval of the data stream for selectively retrieving the portion; (column 19, lines 20-51; The header information (t_x, t_y, t_resolution) is read for each data block.)

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- storing the portion in local storage; (column 5, lines 23-59; column 15, lines 15-37)
- recomposing the image at the image resolution by combining the portion retrieved from remote storage with a local portion of the plurality of data sets stored in local storage; (column 5, lines 23-59; column 15, lines 15-37)
- wherein the recomposing the image at the image resolution comprises executing reverse wavelet decomposition on a group of the data sets ranging from a lowest resolution level to the image resolution, wherein the group comprises the portion and the local portion. (column 5, lines 23-59; column 15, lines 15-37; column 21, line 57 to column 22, line 3)

b. For Claims 29-49, Dekel further teaches:

- determining a viewport resolution of a client viewport; (column 15, lines 60-67; column 23, lines 11-28)
- (a) identifying a highest local resolution level corresponding to one local set of a plurality of decomposed image sets generated from an image by lossless wavelet decomposition, (b) selecting an acceptable image resolution for display in the client viewport by comparing the viewport resolution against progressively higher resolution levels corresponding to the plurality of decomposed image sets, and (c) remotely retrieving desired sets of the plurality of decomposed image sets for recomposing the image at the acceptable image resolution; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; Because data blocks are stored and available at the client up to the highest local resolution level for rendering the low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the image resolution selected are retrieved from remote storage in the server.)
- wherein remotely retrieving desired sets comprises requesting the desired sets from a remote server via a network. (Fig. 1)

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With the above-cited teaching and comparing Claims 29-49 with Claims 1-7 and 8-28, one can conclude that Dekel also teaches the method recited in Claim 29-49 as evident with the cited Dekel's passages in supporting rejections of Claims 1-7 and 8-28.

c. For Claims 50-63, Dekel further teaches a system including client workstations to carries out the methods recited for Claims 1-6 and 7-49.

With the above-cited teaching and comparing Claims 1-7 and 8-49 with Claims 50-63, one can conclude that Dekel also teaches the system recited in Claim 50-63 as evident with the cited Dekel's passages in supporting rejections of Claims 1-7 and 8-28.

d. For Claims 73-86, Dekel further teaches a computer program stored in a machine readable medium to carry out the method recited in Claims 1-7 and 8-19, 21-24, 26-49. (column 4, lines 17-30; Claims 41-42)

With the above-cited teaching and comparing Claims 1-7 and 8-19, 21-24, 26-49 with Claims 73-86, one can conclude that Dekel also teaches the system recited in Claim 73-86 as evident with the cited Dekel's passages in supporting rejections of Claims 1-7 and 8-19, 21-24, 26-49.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dekel et al. (US patent 6,314,452) as applied to Claim 5, and further in view of Sodagar et al. (US patent 6,157,746.)

Dekel teaches the parent Claim 5.

However, Dekel does not teach the feature related different coding for low-frequency and high-frequency components.

Sodagar teaches a wavelet compression system and method, comprising:

-- compressing the high-frequency components using actual values, and compressing the low frequency component at the lowest resolution level using prediction errors. (column 18, lines 3-24)

It is desirable to improve coding efficiency. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Sodagar's teaching of coding Dekel's LL band with predicting error in Dekel's compression system and method because the combination improves coding efficiency of LL band and thus the whole image.

14. Claims 64-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dekel et al. (US patent 6,314,452) as applied to Claim 50, and further in view of Cooke, Jr. et al. (US patent 6,574,629.)

Dekel teaches the parent Claim 50. Dekel also teaches the limitation recited in Claim 72 as discussed above.

However, Dekel does not teach a picture archiving and communication system (PACS) or imaging systems recited in the above-listed claims.

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Cooke teaches PACS system, comprising:

-- a PACS system; (column 33, lines 28-40)

-- an MRI system, a computed tomography system, a positron emission tomography system, a radio fluoroscopy system, a computed radiography system, and an ultrasound system; (Fig. 1; column 9, line 66 to column 10, line 51; column 34, lines 1-20)

-- compression image data for storage, transmission, and retrieval. (column 9, line 66 to column 10, line 51; column 13, line 61 to column 14, line 5)

It is desirable to decode a localized portion of a medical image efficiently for viewing and analysis. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Dekel's compression system and method to compress various images used in Cooke's PACS system because the combination facilitates retrieval interested regions in medical images for medical analysis.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 571-272-7431. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 571-272-7437. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for After Final communications. TC 2600's customer service number is 571-272-2600.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Wenpeng Chen
Primary Examiner
Art Unit 2624

September 15, 2005

A handwritten signature in black ink, appearing to read 'Wenpeng Chen', written in a cursive style.